EXHIBIT A

USP 5,127,019
Joint Claim Construction Chart

Claim Term No.	Claim Language	Agreed Construction	Plaintiff's Proposed Construction	Plaintiff's Evidence in Support	Defendant's Proposed Construction	Defendant's Evidence in Support
1	"**means for providing a plurality of pulses of coherent radiation**" Found in claim number: 1	This element is a means-plus-function element to be construed under 35 U.S.C. § 112, ¶ 6. Function: providing a plurality of pulses of coherent radiation. Structures identified in the specification: a laser oscillator capable of providing repetitive laser pulses.				
2	"**means for sharpening the leading edge of each pulse**" Found in claim numbers: 1 and 16	This element is a means-plus-function element to be construed under 35 U.S.C. § 112, ¶ 6. Function: sharpening the leading edge of each pulse. Structure: a thin metal foil supported on a thin, substantially transparent supporting film; or a stimulated Brillouin scattering (SBS) cell; or a Faraday isolator and a stimulated Brillouin scattering cell; or a Pockels cell; or a fast nonlinear dye; or a stimulated Brillouin mirror.	This element is a means-plus-function element to be construed under 35 U.S.C. § 112, ¶ 6.	'019 patent, FIG. 1, FIG. 6, and FIG. 11 '019 patent, col. 19, l. 40-47 ("The leading edge must be sharpened. This can be done in a number of ways. Thin films, Pockels cells, fast nonlinear dyes, and stimulated Brillouin mirrors have been considered. Aluminum films and stimulated Brillouin scattering cells have been the most effective for us so far. New developments in technology may lead to a preference later on for one of the other sharpening means.") '019 patent, col. 2, l. 47-51 ("The leading edge of each pulse is sharpened either by a metal foil 18 (FIG. 1) or by phase conjugation reflection means 18a (FIG. 6) or 18e (FIG. 11) including a stimulated Brillouin scattering (SBS) cell 18d,18e and optionally a Faraday isolator 18b.") '019 patent, col. 7, l. 8-10 ("Any metal film that allows essentially no laser light transmission through a few hundred Angstrom film thickness is usable as a pulse sharpening foil.")	This element is a means-plus-function element to be construed under 35 U.S.C. § 112, ¶ 6. Function: creating a laser pulse with a very rapid rise time, i.e., not longer than about 5 nanoseconds.	Figures 1 & 6. "The leading edge of each pulse is sharpened either by a metal foil 18 (FIG.1) or by phase conjugation reflection means 18a (FIG. 6) or 18e (FIG. 11) including a stimulated Brillouin scattering (SBS) cell 18d, 18e and optionally a Faraday isolator 18b." (col. 2, ll. 47-51) "pulse sharpener 18 comprising a coating of aluminum about 150 to 5000 angstroms thick on a supporting film that is substantially transparent and thin enough to be non-distorting to the radiation wavefront. The supporting film typically comprises a strong polyester material such as oriented, at least partially crystalline, polyethylene terephthalate, about 1 to 40 micrometers thick. One such material that we have used is Mylar, a product of E.I. du Pont de Nemours & Company." (col. 4, l. 65 – col. 5, l. 6) "The radiation pulse 12 strikes the aluminum film 18, typically vaporizing an area of about 0.1 to 0.2 square millimeters of the film in about 0.1 to 3 nanoseconds, after which the area of vaporization typically expands to

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						about 1 to 1,000 square millimeters in about 2 to 10 nanoseconds. This sharpens the leading edge of the radiation pulse 12 passing through the hole where the film 18 has been vaporized away, ..." (col. 5, ll. 9-16) "The aluminum foil 18 blocks the path of the radiation beam 12 briefly, but is rapidly vaporized by the radiation beam 12, first in a minute region, then rapidly spreading outward from this region until the foil is vaporized over the entire area in the path of the beam. This action provides an extremely sharp leading edge in each radiation pulse 12." (col. 6, ll. 10-16) "In typical apparatus according to the invention, the means for sharpening the leading edge of each pulse comprises means for providing phase conjugation reflection of the radiation to limit the **rise time of the pulse to not longer than about 5 nanoseconds**. Such means typically comprises a stimulated Brillouin scattering (SBS) cell wherein the reflecting material comprises a liquid or gas." (col. 18, ll. 14-21) "The means for providing phase conjugation reflection by photoacoustic scattering may comprise also means for providing Faraday rotation of the radiation. Such means typically comprises a Faraday isolator 18b and a stimulated Brillouin scattering cell 18d." (col. 18, ll. 14-21) "While a short pulse with high peak power would meet the peak pressure requirements, the total energy in the pulse must be high to achieve the necessary depth of shock wave penetration in the material. This leads to the need for an asymmetric pulse for efficient shock processing. The leading edge must be sharpened. This can be done in a number of ways. Thin films, Pockels cells, fast

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						nonlinear dyes, and stimulated Brillouin mirrors have been considered. Aluminum films and stimulated Brillouin scattering cells have been the most effective for us so far. New developments in technology may lead to a preference later on for one of the other sharpening means." (col. 19, ll. 35-47)
3	"**means for directing each pulse as a beam having a predetermined diameter onto amplifying means comprising first and second laser amplifier rods in series**" Found in claim number: 1	This element is a means-plus-function element to be construed under 35 U.S.C. § 112, ¶ 6.	This element is a means-plus-function element to be construed under 35 U.S.C. § 112, ¶ 6. Function: directing each pulse as a beam having a predetermined diameter onto an amplifier comprising a first and second amplifier in series. Structures identified in the specification: one or more mirrors, lenses, and/or beam splitters.	'019 patent, FIG. 1, FIG. 6, and FIG. 11 '019 patent, col. 2, l. 52-56 ("Each pulse is directed from a preamplifier 20a via a mirror 129, a retarder plate 130, lenses 131,132, a mirror 133, and an iris 134, as a beam 112 having a predetermined diameter, onto an amplifier 123 comprising first and second laser amplifier rods 23a,23b in series.") '019 patent, col. 5, l. 21-27 ("The preamplifier 20, which may be (and typically is) similar to the laser pump cavity 14, amplifies the radiation pulse 12, typically by about 3 to 10 decibels, and the amplified radiation 12 proceeds by way of a telescope, typically comprising a negative lens 21 and a positive lens 22, to an amplifier 23") '019 patent, col. 13, l. 56-61 ("The means for directing each pulse 112 from the preamplifier 20a to the first laser amplifier rod 23a comprises directing, equalizing, and beam expanding means including a mirror 129, a retarder plate 130 (typically a half-wave plate), a negative lens 131, a positive lens 132, and a mirror 133. The retarder plate 130 typically is rotated to adjust the fractions of the energy delivered by the beam splitter 137 to the second and third laser amplifier rods 23b and 23'a so as to equalize the energy delivered by the amplifier chains 123 and 123'. The beam expander comprises the negative lens 131 followed by the positive lens 132")	This element is a means-plus-function element to be construed under 35 U.S.C. § 112, ¶ 6. Function: directing and equalizing the beam from the preamplifier to the first of a pair of laser amplifier rods in series, and changing the beam diameter from that of the laser preamplifier rod to that of the first laser amplifier rod. Structure: the combination of a mirror, a retarder plate, a negative lens, a positive lens, a mirror, and an iris.	Figure 6. "**Each pulse is directed from a preamplifier 20a via a mirror 129, a retarder plate 130, lenses 131, 132, a mirror 133, and an iris 134, as a beam 112 having a predetermined diameter, onto an amplifier 123 comprising first and second laser amplifier rods 23a, 23b in the series**." (col. 2, ll. 52-56) "**The means for directing each pulse 112 from the preamplifier 20a to the first laser amplifier rod 23a comprises directing, equalizing, and beam expanding means** including a mirror 129, a retarder plate 130 (typically a half-wave plate), a negative lens 131, a positive lens 132, and a mirror 133." (col. 13, ll. 56-61) "The beam expander comprises the negative lens 131 followed by the positive lens on 32, **to expand the diameter of the beam** by a factor of about 2.5, from about 1 cm (the diameter of the preamplifier rod 20a) to about 2.5 cm (the diameter of the amplifier rod 23a)." (col. 13, l. 65 – col. 14, l. 3)
4	"**means for directing at least a major portion of the radiation amplified by the first**	This element is a means-plus-function element to be construed under 35 U.S.C. § 112, ¶ 6.	This element is a means-plus-function element to be construed under 35 U.S.C. § 112, ¶ 6.	'019 patent, FIG. 1, FIG. 6 '019 patent, col. 14, l. 4-7 ("The amplifier 123 includes means, typically including a beam splitter 137, for directing at least a major portion of the radiation 112 amplified by the first amplifier rod 23a	This element is a means-plus-function element to be construed under 35 U.S.C. § 112, ¶ 6. Function: directing at least a major portion of the radiation	Figure 6. "At least a major portion of the radiation 112 amplified by the first amplifier rod 23a is directed to the second amplifier rod 23b,

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	amplifier rod to the second amplifier rod" Found in claim number: 1		Function: directing at least a major portion of the radiation amplified by the first amplifier rod to the second amplifier rod. Structures identified in the specification: one or more mirrors, lenses, and/or beam splitters.	to the second amplifier rod 23b.")	amplified by the first of the "first and second amplifier rods in series" to the second. Structure: at least a beam splitter located between the output of the first amplifier rod and the input of the second amplifier rod.	where it is amplified …" (col. 2, ll. 56-59) "The amplifier 123 includes means, **typically including a beam splitter 137**, for directing at amplified by the first amplifier rod 23a to the second amplifier rod 23b." (col. 14, ll. 4-7) "A portion of the output 112 of the first amplifier rod 23a, typically about 10 percent, may be directed by the beam splitter 137 and mirrors 139 to a second similar amplifier 123′ to provide a second amplified radiation pulse 112′ …" (col. 14, ll. 45-49)
5	"**means for directing the radiation amplified by the second amplifier rod to a surface of the solid material**" Found in claim number: 1	This element is a means-plus-function element to be construed under 35 U.S.C. § 112, ¶ 6. Function: directing the radiation amplified by the second amplifier rod to a surface of the solid material. Structures identified in the specification: one or more positive lenses and mirrors.				
6	"**means for providing substantially uniform spatial amplitude in the radiation directed to the surface of the solid material**" Found in claim number: 1	This element is a means-plus-function element to be construed under 35 U.S.C. § 112, ¶ 6. Function: providing substantially uniform spatial amplitude in the radiation directed to the surface of the solid material. Structures identified in the				

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		specification: First and second amplifier rods in series, each amplifier rod having at least one linear flashlamp associated with it, the at least one linear flashlamp of the first amplifier rod being positioned in a staggered relationship to the at least one linear flashlamp of the second amplifier rod; and/or an oscillator that provides a beam of unpolarized coherent radiation in which the spatial amplitude pattern of each succeeding pulse is substantially a mirror image of the pattern in the pulse that preceded it; and/or an oscillator that provides a beam of unpolarized coherent radiation in which the spatial amplitude pattern of each succeeding pulse is rotated about its axis by a predetermined smaller angle from the pattern in the pulse that preceded it; and/or a neodymium doping level for the amplifier rods that provides spatial flattening of the energy distribution as the laser pulse passes through the amplifier rods.				